

What Is Claimed Is:

1. A palm mechanism for a robot hand, comprising:

a palm plate;

at least a first and second finger units;

5 a turning actuator fixed facing forward at a rear side of the palm plate; and

a turning plate fixed perpendicularly to a rotational output shaft of the turning actuator;

wherein the first and second finger units each comprise an
10 actuator having a rotational output shaft, a finger main body, and a joint portion that links the rotational output shaft and the finger main body;

the actuator of the first finger unit is fixed facing forward on the palm plate, and the joint portion and the finger
15 main body project forward from a front surface of the palm plate;

the actuator of the second finger unit is fixed facing forward on the turning plate, and the joint portion and the finger main body project forward from the front surface of the palm plate;

20 the actuator is driven to allow the finger main body to be bent around the joint portion to a predetermined angle in a direction away from the front surface of the palm plate and in a direction toward the front surface of the palm plate from a center position that extends along the center axis of the
25 rotational output shaft; and

the turning actuator is driven to allow the second finger unit to be turned to a predetermined angle around a center axis of rotation of the turning actuator in a direction away from a position adjacent to the first finger unit.

5 2. The palm mechanism for a robot hand according to claim 1, comprising two second finger units and two turning actuators to turn the second finger units, wherein these two finger units are disposed on both sides of the first finger unit.

 3. The palm mechanism for a robot hand according to claim 1
10 or 2, wherein the first and second finger units each have:

 a mounting flange fixed to the palm plate;

 said actuator fixed at its front-end portion to the mounting flange;

 a drive-side bevel gear coaxially fixed to a tip portion of
15 the rotational output shaft that passes through and projects forward from the mounting flange;

 a pair of bearing housings that extends in the forward direction away from the front surface of the mounting flange through positions on both sides of the drive-side bevel gear;

20 bearings mounted in the bearing housings;

 a joint shaft rotatably supported at both ends by the bearings, and aligned in a direction perpendicular to the center axis of the rotational output shaft of the actuator;

a driven-side bevel gear coaxially fixed on an outer peripheral surface of the joint shaft, and engaged with the drive-side bevel gear;

a connecting member having one end fixed to the joint shaft,
5 and extending in a direction perpendicular to the joint shaft;
and

a finger main body connected to a tip portion of the connecting member.

4. The palm mechanism for a robot hand according to claim 3,
10 wherein a spring plate is mounted on an external end surface of the bearings to restrict the axial bias of the driven-side bevel gear fixed to the joint shaft.

5. The palm mechanism for a robot hand according to claim 3 or 4, wherein a strain gauge is mounted on a side surface of the
15 connecting member to detect torque transmitted through the connecting member.

6. The palm mechanism for a robot hand according to claim 3, 4, or 5, wherein the joint shaft is a hollow shaft having a hollow portion for wiring.

20 7. The palm mechanism for a robot hand according to any of claims 3 to 6, comprising:

a second connecting member connected to a tip portion of the finger main body;

a second actuator coaxially mounted on the second connecting member, and housed in the hollow finger main body;

a second drive-side bevel gear coaxially fixed to a tip portion of the rotational output shaft of this second actuator;

5 a pair of second bearing housings that are formed on the second connecting member and are extended in the forward direction through positions on both sides of the second drive-side bevel gear;

second bearings mounted in the second bearing housings;

10 a second joint shaft rotatably supported at both ends by the second bearings, and aligned in a direction perpendicular to a center axis of the rotational output shaft of the second actuator;

15 a second driven-side bevel gear coaxially fixed on an outer peripheral surface of the second joint shaft, and engaged with the second drive-side bevel gear;

a third connecting member having one end fixed to the second joint shaft, and extending in the direction perpendicular to the second joint shaft; and

20 a second finger main body connected to a tip portion of the third connecting member.